Teaching Key Language Skills Using Relational Frame Theory

Ian Stewart, Ph.D.
Siri Ming, BCBA
Naoko Kishita, Ph.D.
National University of Ireland, Galway
Overview

- Introduction
- Relational Frame Theory
- Teaching using Derived Relational Responding skills
- Teaching Relational Framing
Introduction
RFT: Why is it important?

- A theory of human language and cognition
- If we have an idea how language is learned and cognitive skills develop, we can teach them
- Central idea is that language development involves learning to relate words, events and objects to one another
• Study 1: Typically developing 8-12 year olds
• Training Group received SAME, SAME & OPPOSITE and MORE & LESS M.E.T. across a period of 24 months
Figure 2: Data for Individual Participants in Training and Control Groups

Relational Frame Theory
Overview

- Relational Frame Theory
  - Relational Responding
    - Emergent Relations
    - Transformation of Function
Non-Arbitrary Relational Responding

Training Exemplars

Generalization
Identity Matching
Non-Arbitrary Relational Responding

- Same (Identity)
- Different (Oddity)
- Bigger
- Smaller (Comparison)
From the perspective of **RELATIONAL FRAME THEORY** there is an important distinction to be made.

<table>
<thead>
<tr>
<th>NON-ARBITRARY (PHYSICAL) RELATIONS</th>
<th>ARBITRARILY APPLICABLE RELATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Non-Arbitrary Relations" /></td>
<td><img src="image2" alt="Arbitrarily Applicable Relations" /></td>
</tr>
</tbody>
</table>

- **Non-Arbitrary Relations**:
  - *Wolf* > *Dog*
  - *Wolf* > *Wolf*
  - *Dog* > *Dog*

- **Arbitrarily Applicable Relations**:
  - *Apple* = *Apple*
  - *10¢* > *5¢*
  - *Wolf* > *Dog*

- Examples of relations:
  - *IS*
  - *SAME*
  - *MORE THAN*
  - *BIGGER THAN*
Frames of Opposition

https://secure.raiseyouriq.com/

Assessment  Question 17 of 55

Answer all 55 questions
There is no feedback
Need help?

SAF is opposite to LAC
LAC is the same as VUH

Is VUH the same as SAF?

© 2013 Relational Frame Training Ltd. All rights reserved.
... RFT suggests that there is a multiplicity of forms of AARR / relational frames

What all frames have in common is that they are generalized contextually controlled patterns of relational responding.
Relational Frame Theory

BA account of Human Language & Cognition

• Relating stimuli is **learned**
• Relational responding becomes a **generalized operant**
• Outcome of **Multiple Exemplar Training**
• Humans alone show abstract relational responding in which the relating is no longer dependent on physical properties but on contextual cues: **Relational framing**
• Patterns of relational responding called relational **frames**
  • E.g., Co-ordination, Comparison, Hierarchical
• Relating framing is **the basis of human language**
• Frames defined in terms of three **properties**
  • Mutual entailment, Combinatorial entailment, Transformation of function
Overview

- Relational Frame Theory
  - Relational Responding
  - Emergent Relations
  - Transformation of Function
Emergent Relations

- Exercise
1. Mutual Entailment

2. Combinatorial Entailment

Cup

Cubaiya
Learning History: MET

Conditional Discrimination
Emergent Relations
Emergent Relations

A1

B1

C1

\( \in \text{faw} \)

A2

B2

C2

\( \in \text{jun} \)
Emergent Relations
Overview

- Relational Frame Theory
  - Relational Responding
  - Emergent Relations
  - Transformation of Function
ALL FRAMES HAVE THREE DEFINING PROPERTIES...

1. Mutual Entailment

2. Combinatorial Entailment

3. Transformation of Functions

Limoo

Betrang
What we mean by function

<table>
<thead>
<tr>
<th>Unconditioned Elicited</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditioned Elicited</td>
</tr>
<tr>
<td>Discriminative</td>
</tr>
<tr>
<td>Consequential</td>
</tr>
<tr>
<td>Extinction</td>
</tr>
<tr>
<td>Etc.</td>
</tr>
</tbody>
</table>

- E.g. lemon -> tastes sour
- E.g. sight of food -> salivation
- E.g. a red light -> stop
- E.g. money -> reinforcing
- E.g. faulty machine -> give up
ALL FRAMES HAVE THREE DEFINING PROPERTIES...

1. Mutual Entailment

2. Combinatorial Entailment

3. Transformation of Functions

Limoo

Betrang

sour
yellow
bumpy

make lemonade
“lemon”

“Betrang”
sour
yellow
bumpy

make lemonade
“lemon”

Thursday, June 13, 13
Established relational network as follows using arbitrary stimuli:

\[ A \prec B \prec C \]

Given CS shock function

Given 0.5 strength shock function

**TEST GSR:**

<table>
<thead>
<tr>
<th></th>
<th>Relational Training</th>
<th>No Relational Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsiemen Change relative to B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-3.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-2.2500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-1.5000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.7500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.7500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.0000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**DOUGHER, HAMILTON, FINK & HARRINGTON (2007)**

Thursday, June 13, 13
Teaching using existing DRR skills
STIMULUS EQUIVALENCE: SIDMAN (1971)

Spoken word (A)

Picture (B)

Written word (C)
Teaching using DRR ability

• Use appropriate pattern of conditional discrimination training to efficiently teach novel relations between stimuli, and/or to use transfer of functions for novel responding
Teaching using DRR ability

- Reading and spelling (e.g., Sidman, Cresson, & Willson-Morris, 1974; De Rose, de Souza, & Hanna, 1996);
- Name-face matching (e.g., Cowley, Green, & Braunling-McMorrow, 1992);
- US geography (LeBlanc, Miguel, Cummings, Goldsmith & Carr, 2003);
- Money skills (McDonagh, McIlvane & Stoddard, 1984; Keintz, Miguel, Kao & Finn, 2011)
- Transitioning using activity schedules (Miguel, Yang, Finn & Ahearn, 2009);
- Communication skills including manual signs, picture exchange communication and vocal communication (e.g., Osborne & Gatch, 1989; Rehfeldt & Root, 2005; Halvey & Rehfeldt 2005; Rosales & Rehfeldt 2007)
Teaching using Transfer of Function


Taught discriminative function for manding (multiply controlled using PECS)

Discriminative function for manding transferred from B to C: “derived mand” using text

A: spoken word
B: picture
C: printed word
Teaching Relational Framing

See Rehfeldt & Barnes-Holmes (2009)
Precursor Skills

- Learner readiness skills
- Observing responses
- Joint attending, social referencing
- Early manding
- Establish conditioned social reinforcers and task completion as a reinforcer
Establishing Initial Frames

- Move from nonarbitrary relations to arbitrary relations
Non-Arbitrary Coordination

Arbitrarily Applicable Relational Coordination

Physical

CONTEXTUAL CUE
Establishing Initial Frames

- Use standard discrimination training procedures (basic elements of DTT), with a focus on:
  - Bidirectional responding
  - Responding as both speaker and listener
Establishing Initial Frames

Multiple exemplar training, with a focus on:

- Testing for derived relations
- Focus on *flexibility* of responding
• Teach A→B with stimulus set 1 (e.g., 4 targets, cow, dog, cat, pig – 20 trials).

• Test B→A with stimulus set 1 (e.g., probe ‘reversal’ across four targets – 20 trials)
• If no ME, then teach B→A with stimulus **set 1** (e.g., directly teach the tact across the 4 targets, cow, dog, cat, pig – 20 trials).

• Teach A→B with stimulus **set 2**

• Test B→A with stimulus **set 2**

• etc.
MET for Combinatorial Entailment

- Teach A→B and C→B with stimulus set 1
- Test C→A/A→C with stimulus set 1
If no CE, then teach $C \rightarrow A/A \rightarrow C$ with stimulus **set 1**
same as
different from
before / after
in front of / behind
bigger / smaller than
right / left of
type / class of
analogous to
above / below
opposite to

... RFT suggests that there is a multiplicity of forms of AARR / relational frames

What all frames have in common is that they are generalized contextually controlled patterns of relational responding
Is a jumjaw the same as a cat?

Is a jumjaw bigger than a tractor?

Does a jumjaw have ears?

Which one of these is a jumjaw?

Lassie, Old Smoky, Katrina, Tweety

If I said there was a jumjaw at the back of the room, how would you react?

Do you own a jumjaw?

Exercise: Make up a sentence with the word jumjaw.
Establishing Other Frames

Consistent relational cues:

• Focus on the specific relation to be targeted (same, name, goes with, part of, category, etc.)

• Establish the relational cue across stimulus sets

• Mixing of trials involving different relations
Establishing Relational Frames

For all frames:
• Teach responding as speaker and listener
• Teach bidirectional relations between stimuli
• Focus on flexibility—the relation is key, not stimulus items, method of presentation, etc.
• Move between nonarbitrary and arbitrary relations
• Test for mutual entailment, combinatorial entailment, transformation of function
• Teach multiple examples of relations
Frames of Distinction: Same/Different Responding

- Nonarbitrary
- Nonarbitrary second order
- Arbitrary conditional discriminations
- Arbitrary derived relations
Contextually controlled nonarbitrary same/different responding

- Listener responding:
Contextually controlled nonarbitrary same/different responding

- Tact responding:
Contextually controlled nonarbitrary same/different responding

• Use random selection of multiple sample/comparison pairs

• Can start with either listener discrimination or tact or both

• Start with blocked trials (sets of 3 correct) and move to random rotation
Contextually controlled 2nd order nonarbitrary same/different responding

- Listener responding:

- Same Color
- Different Color
- Same Shape
- Different Shape
Contextually controlled 2nd order nonarbitrary same/different responding

- Tact responding:
Contextually controlled 2nd order nonarbitrary same/different responding

- Use random selection of multiple sample/comparison pairs
- Can start with either listener discrimination or tact or both
- Start with blocked trials (sets of 3 correct) and move to random rotation
Arbitrary same/different conditional discriminations

Iris likes pizza

Iris likes the same food as Kayley

Iris likes different food from Hannah
Arbitrary same/different derived relations

- Kayley and Iris
- Hannah and Iris
- Kayley and Hannah
**Arbitrary same/different derived relations**

- Iris (same)
- Kayley (different)
- Hannah (different)

Thursday, June 13, 13
Frames of Comparison

- Bidirectional relations: if this is bigger, then that is smaller
- Flexibility: sometimes this is bigger, and sometimes this is smaller
- Move from nonarbitrary to arbitrary: nonphysical comparisons (e.g. value)
- Test for ME, CE, ToF
Frames of Opposition

• TARPA DEMONSTRATION
Spatial Relations

- Bidirectional relations: object to base AND base to object
- Flexibility: items in different relations, base/object reversals
• Deictic relations: perspective taking (e.g., McHugh, Barnes-Holmes & Barnes-Holmes, 2004; Barnes-Holmes, McHugh & Barnes-Holmes, 2004)

• Analogies: relating relations (e.g., Persicke, Tarbox, Ranick & St. Clair, 2012)
Some resources


- [www.foxylearning.com](http://www.foxylearning.com)